Interactive Story Telling
for
Presentation with Visualization

Helwig Hauser
University of Bergen, Norway
www.ii.UiB.no/vis
Visualization – what for?

- **General definition:**
  Visualization = utilizing computer graphics technology to enable insight into data

- **Task categories:**
  - visualization for exploration / analysis
    - exploration: detecting the unexpected
    - analysis: confirming/rejecting hypotheses
    - interactive visual information drill-down
    - visualization as expert tool
  - visualization for presentation
    - presentation: communication of findings to others
    - ranging between static and interactive graphics
    - includes visualization for "the masses"
    - special requirements wrt. comprehensibility, credibility

Some State of the Art

- **How to present?**
  (esp. wrt. interactive visualization)
  - images (with labels!)
  - animations
  - semi-interactive graphics
  - interactive graphics

- [VRVis (Mroz…)]
- [Hamburg (Höhne…)]
- [Magdeburg (Preim…)]
The Basic Idea (EuroVis 2007)

- Improve comprehensibility
  - challenge/problem: loaded vis. results difficult to (fully) understand
  - approach/solution: preserve the creation of a visualization result (not only the final picture)

- Improve credibility
  - challenge/problem: „sink or swim“ visualization („believe it or …“)
  - approach/solution: enable the interactive reinvestigation on demand (diminish disbelief)

Sample Story

- Analysis of a tripod fracture…
Overview

- Visualization stories
- Story telling and interaction
- Sample story
- Story authoring, implementation
Story Model

- From **story node** to **story node** (cf. keyframe anim.),
  - usually the story stops here for a moment
  - usually nodes are annotated
- via **story transitions**, which are composed of **action groups**, that join **actions** together which should be done in parallel

Sample Story Templates

- Information drill-down (à la Shneiderman et al.)
  - overview first
  - zoom & filter
  - details on demand
- Comparative visualization
  - e.g., left side vs. right side (symmetric datasets)
  - e.g., pre-operative vs. post-operative (multiple datasets)
- Iterative investigation
  - feature set traversal (FORALL features DO visualization)
  - cf. lymph nodes visualization [Krüger et al., EuroVis ’05]
Three Layers of Interaction in Visualization

1. viewing/lighting
2. representation ("how")
3. content ("what")

Story Layout

portrait. landscape

story nodes
Passive Story Consumption

- default configuration, no interaction
- the story is consumed **like an animation**

Story Telling and Interaction

- how far do we go off the story during interaction?
# Story Playback with Interactive Approval

- **at a certain point...** (here: story node #2)
- **... the user decides to pause the story...**
- **... and to interactively approve the current visualization setting (here: varying opacity, f.i.)**
- **then the user (automatically) returns to the story and continues story playback**

# Semi-Interactive Story Playback

- **at a certain point...** (here: after story node #2)
- **... the user decides to leave the story...**
- **... and to interactively steer certain visualization parameters him-/herself, instead of letting the story set them (here: taking another viewport, f.i.)**
- **at another point...** (here: after story node #3)
- **then the user (automatically) returns to the story and continues story playback**
Total Separation from the Story

- at a certain point… (here: after story node #3)
- ... the user decides to leave the story...
- ... and to change to interactive visualization (no return to the story)

All Four Interaction Patterns

- passive story playback
- st. telling with interactive approval
- semi-interactive story playback
- total separation from story
Story Authoring

- Story generation, then story editing

Implementation

- Based on RTVR (Java)
Story Telling for Presentation

- New approach to improve
  - comprehensibility
  - credibility
- Presentation relevant (often costly)
- Semi-interactive visualization
  - guided interaction (if interaction at all)
  - adapts to user preferences
- Future opportunities
  - automatic export of reports
  - delayed / remote cooperation (joint analysis)
  - documentation

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